

**Final
Site-Specific Safety and Health Plan Attachments
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan
Calhoun County, Alabama**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street, Mobile,
Alabama 36602**

Prepared by:

**IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923**

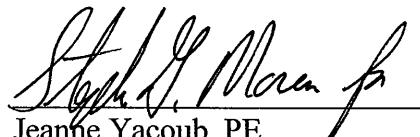
**Task Order CK05
Contract No. DACA21-96-D-0018
IT Project No. 774645**

August 2002

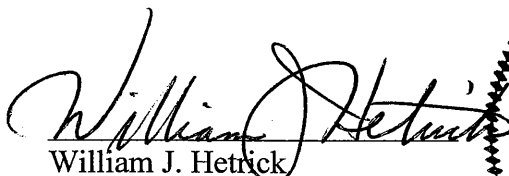
The following Site-Specific Safety and Health Plan (SSHP) has been designed for the methods presently contemplated by the company for execution of the proposed work. Therefore, the SSHP may not be appropriate if the work is not performed by or using the methods presently contemplated by the company. In addition, as the work is performed, conditions different from those anticipated may be encountered and the SSHP may have to be modified. Therefore, the company only makes representations or warranties as to the adequacy of the SSHP for currently anticipated activities and conditions. This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan (Revision 1, 2002) and Installation-Wide Ordnance and Explosives Management Plan (Revision 3, 2002), Fort McClellan, Alabama.

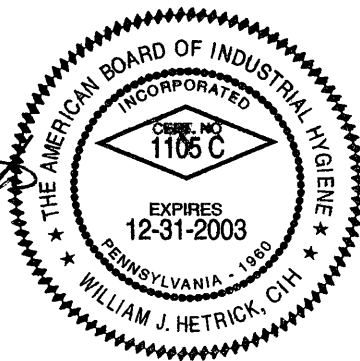
**Site-Specific Safety and Health Plan Attachment Approval
Fort McClellan, Calhoun County, Alabama**

I have read and approve this site-specific safety and health plan attachment for the site investigation at Former Toxic Gas Area - Pelham Range, Parcel 211(7) Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

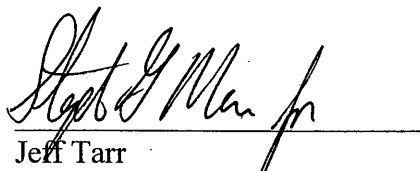

Jeanne Yacoub, PE
Project Manager

8/14/02
Date


William J. Hetrick
Health & Safety Manager




8/14/02
Date

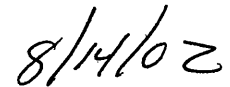

Jeff Tarr
Site Coordinator

8/14/02
Date

Acknowledgements

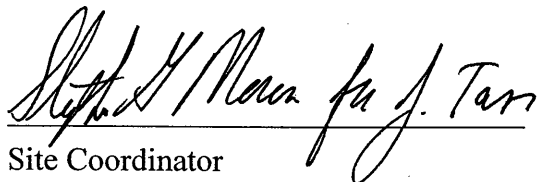
The approved version of this site-specific safety and health plan (SSHP) attachment for the Former Toxic Gas Area - Pelham Range, Parcel 211(7), Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.

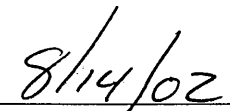

Project Manager



Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and the health and safety manager.


Site Coordinator



Date

Site-Specific Safety and Health Plan Acknowledgement Form

I have been informed of, and will abide by the procedures set forth in this site-specific safety and health plan attachment for site investigations associated with the Former Toxic Gas Area - Pelham Range, Parcel 211(7), Fort McClellan, Alabama.

DateThis image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Fort McClellan Gate Hours

Galloway Gate	Galloway Road. Open 6 am to 6 pm Monday through Friday
Baltzell Gate	Baltzell Road. Open 24 hours daily, 7 days a week.

Pelham Range	IT personnel will contact the Range Control Office each day access is required to receive an access permit and available areas of entry. See Attachment 1 for Range Control contact for Pelham Range.
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Fort McClellan Project Emergency Contacts

Range Control Office (Main Post).....(256) 848-6772
Fire Department (off post)911
Ambulance (off post)911
Regional Medical Center(256) 235-5121
Military Police (SSG Busch) (256) 848-5680, 848-4824
DOD Guard Force (Mr. Bolton) (256) 848-5680, 848-4732
Anniston Police Department(256) 238-1800
Chemical Agent Emergencies.....(256) 895-1598
 (Mike Smith, CEHNC) cell phone (256) 759-3931
UXO Emergencies(256) 895-1598
 (Mike Smith, CEHNC) cell phone (256) 759-3931
UXO Non emergencies/Reporting Only (Mike Moore)(256) 848-5433
CWM Reporting (Ron Leavy)(256) 848-6853
 And (Ellis Pope) (334) 690-3077 or 1-800-543-2021
Baltzell Gate Guard Shack..... (256) 848-5693, 848-3821
National Response Center & Terrorist Hotline.....(800) 424-8802
Poison Control Center.....(800) 462-0800
EPA Region IV(404) 562-8725
Ronald Levy, BRAC Environmental Coordinator.....(256) 848-6853
Lisa Kingsbury, FTMC Transition Force(256) 848-7455
Ellis Pope, U.S. Army Corps of Engineers.....(251) 690-3077
Jeanne Yacoub, IT Project Manager(770) 663-1429
Bill Hetrick, IT H&S Manager Direct dial (865) 692-3571, and pager (888) 655-9529
Jeff Tarr, IT Site Manager..... (256) 848-3482, -3499
Mike Moore, Fort McClellan Safety Office.....(256) 848-5433
Dr. Jerry H. Berke, Health Resources Occupational Physician(800) 350-4511

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List of Acronyms

See Attachment 1, List of Abbreviations and Acronyms, in the site-specific field sampling plan contained in this binder.

1.0 Site Work Plan Summary

Project Objective. The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation at the Former Toxic Gas Area - Pelham Range, Parcel 211(7), under Task Order CK05, Contract Number DACA21-96-D-0018. IT will be collecting environmental samples to determine the presence or absence of potential site-specific chemicals PSSC at this site.

The scope of work for activities associated with the investigation at the Former Toxic Gas Area - Pelham Range, Parcel 211(7) includes the following task:

- Conduct a surface and near-surface UXO survey over all areas to be included in the sampling effort.
- Provide downhole UXO avoidance support for all drilling and intrusive sampling to determine buried downhole hazards.
- Collect surface soil, subsurface soil and groundwater samples to determine if potential site-specific chemicals are present.
- Collect one sample from a 55 gallon drum
- Conduct a geophysical survey for mapping a possible waste disposal site for buried glass and/or metal.
- Analyze samples for the parameters listed in the SFSP.

Attachment 2, Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities, confirm that the historical records available for the sites have been reviewed and that UXO support is required for all site activities. Additionally, based on all available information, it is anticipated that the potential for chemical warfare agents is low, and no real time air monitoring for chemical warfare materials will be required. However, all intrusive activities at the Former Toxic Gas Area – Pelham Range, Parcel 211(7) will require appropriate personal protective equipment and supplied air emergency egress packs.

UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at this site. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purpose of UXO avoidance. The site-specific UXO safety plan will be used to support sample collection activities for this investigation, if incidental ordnance, explosives, and UXO are encountered and require avoidance.

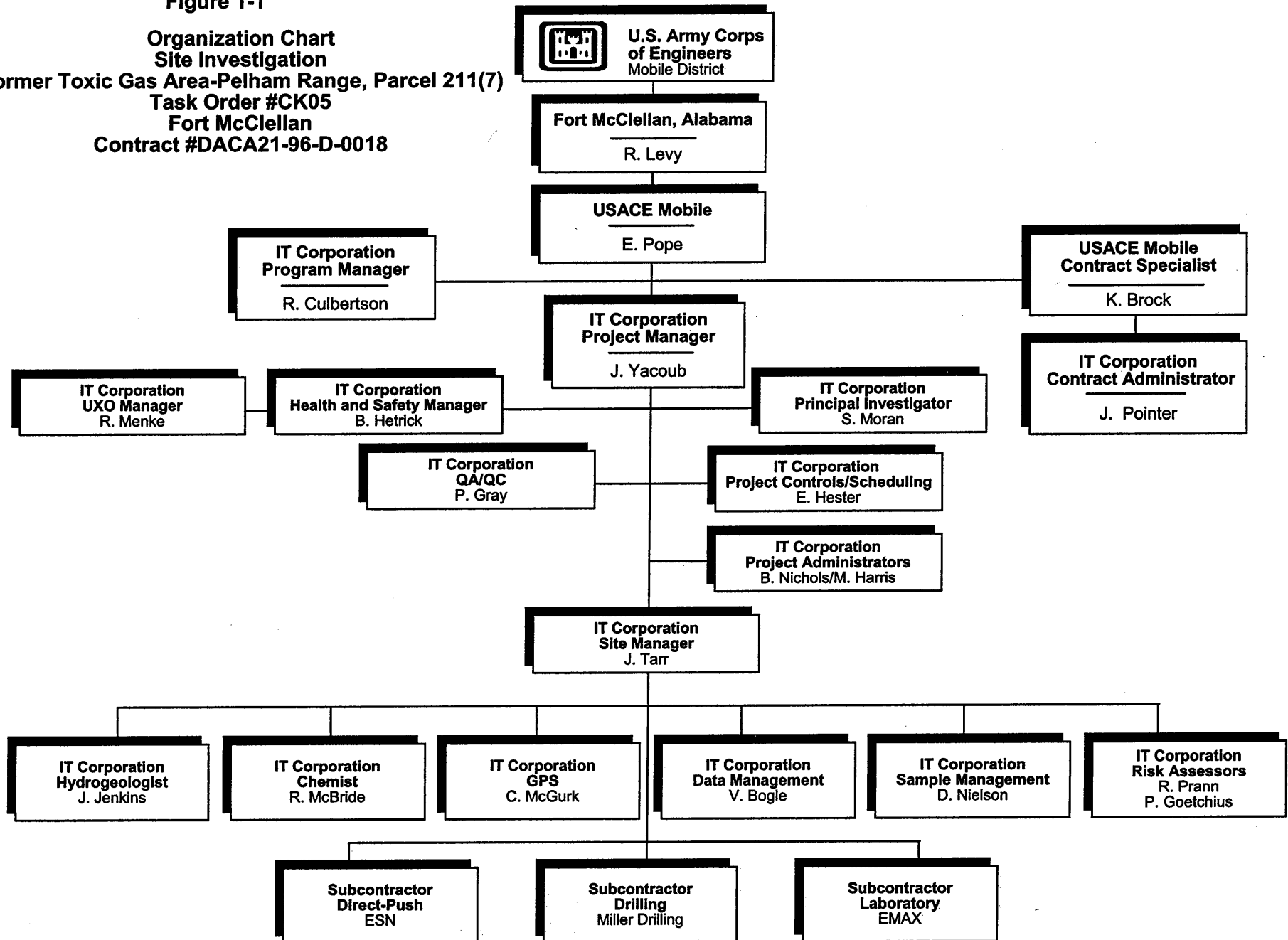
At completion of the field activities and sample analysis, draft and final reports will be prepared to summarize the results of the activities, to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate. The site investigation sampling reports will be prepared in accordance with current U.S. Environmental Protection Agency (EPA) Region 4, and the Alabama Department of Environmental Management (ADEM) guidelines.

Personnel Requirements. Up to 10 employees are anticipated for this scope of work. See Figure 1-1 for the site organization chart.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the *Installation-Wide Safety and Health Plan* (SHP) for site investigations at FTMC, and be familiar with the requirements of this site-specific safety and health plan (SSHP). This SSHP must be used in conjunction with the Installation-Wide SHP (IT 2002) and the *Installation-Wide Ordnance and Explosives Management Plan* (IT 2002), FTMC, Alabama.

Figure 1-1

**Organization Chart
Site Investigation
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Task Order #CK05
Fort McClellan
Contract #DACA21-96-D-0018**



2.0 Site Characterization and Analysis

2.1 Anticipated Hazards

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE). Site control with the use of specific work zones (support zone, contamination reduction zone, and exclusion zone) is addressed in Chapter 7.0 of Appendix A of the *Installation-Wide Sampling and Analysis Plan* (SAP) for FTMC (IT, 2002)

Detailed descriptions of each of the sites to be investigated can be found the site specific field sampling plan (SFSP) and should be reviewed to supplement this site specific safety and health plan (SSHP). Potential contaminant sources at the Former Toxic Gas Area - Pelham Range, Parcel 211(7) are primarily nitroexplosives, CWM breakdown products and CWM decontaminants. Section 2.2, General Site Information, describes the CWM that were reportedly used at this site. Additional metals associated with the live fire of small arms include: arsenic, antimony, and barium. Engineering controls (dust suppression) will be required where site activities generate visible dust emissions from vehicle and equipment operations performed off established roadways.

Procedures contained in the Site Specific UXO Safety Plan shall be followed for all site activities associated with this investigation.

The IT standard operating procedure for drum sampling, Attachment 2 of the Field Sampling Plan, shall be utilized where more stringent requirements are imposed above those required in this SSHP.

Table 2-1 contains the toxicological properties of chemicals anticipated or to be used at the Former Toxic Gas Area - Pelham Range, Parcel 211(7). Additionally, Attachment 3 contains the NIOSH Pocket Guide to Chemical Hazards information on CWA previously used at the site. Only those CWA listed in current NIOSH publications are included and do not represent the only agents used at this site based on historical documentation.

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan
Calhoun County, Alabama**

(Page 1 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Arsenic and soluble inorganic compounds (as As) [7740-38-2]	NA	NA	Inh Abs Ing Con	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances; hyperpigmen- tation of the skin (carcino- genic); peripheral neuropathy, respiratory irritation.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediately medical attention	0.01 mg/m ³ 0.2 mg/m ³ (Ca-29 CFR 1910.1018 Inorganic compounds)	C0.002 mg/m ³	PEL TLV REL	Ca [100 mg/m ³]
DS2	?	?	Inh Ing Con	Direct contact will corrode skin, cause corneal opacification, severe burns, and esophageal stricture; inhalation may cause CNS depression, liver damage, nausea, vomiting, and respiratory irritation. Repeated skin and respiratory exposure can cause skin sensitization and asthma.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention. Give milk/water if conscious.	1 ppm 1 ppm 5.2 mg/m ³	- - Ceiling	TLV TLV TLV TLV	
Fuel oil (diesel oil, medium)	?	?	Ing Inh Con	Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, sub- sternal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention			PEL TLV REL	

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan
Calhoun County, Alabama**

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Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Gasoline [8006-61-9]	?	0.3	Inh Ing Con	Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	300 ppm Ca, lowest feasible conc. (LOQ 15 ppm)	500 ppm	PEL TLV REL	?
GB	?	?	Abs	Anticholinesterase agent producing cholinergic poisoning; tightness in chest, wheezing, increased bronchial secretion, cough, breathing difficulty, pulmonary edema, death; CNS depression, coma, convulsion; sweating; salivation, abdominal cramps, heartburn, belching, diarrhea, involuntary defecation.	Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.		C0.0001 mg/m ³	AEL	0.2 mg/m ³
Hydrogen chloride (hydrochloric acid) [74-90-8]	12.74	0.255–10.6	Inh Ing Con	Inflamed nose, throat, larynx; cough, burns throat, choking; burns eyes, skin; dermatitis; in animals; laryngeal spasm; pulmonary edema.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention		C5 ppm C5 ppm C5 ppm	PEL TLV REL	100 ppm
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43–200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	400 ppm 400 ppm 400 ppm	500 ppm 500 ppm 500 ppm	PEL TLV REL	12,000 ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan
Calhoun County, Alabama**

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Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Lewisite (Arsenic trichloride)	?	?	Inh Con	Blister agent. Geranium-like odor. Systemic poison causing pulmonary edema, diarrhea, restlessness, subnormal temperature, and low blood pressure.	Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.		0.003 mg/m ³	AEL	
Methanol	10.85	4.2-5960	Inh Abs Ing Con	Irritated eyes, headache, drowsiness, lightheadedness, nausea, vomiting, disturbance in vision, blindness.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Fresh air Swallow: Immediate medical attention		200 ppm (skin) 200 ppm (skin) 200 ppm	PEL TLV REL	25,000 ppm
Motor oil [NA]	?	?	Inh Ing	See oil mist; usually only a problem if misted or ingested.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediate medical attention			PEL TLV REL	

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan
Calhoun County, Alabama**

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Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Mustard gas	?	0.0006 mg/m ³	Abs Inh	Garlic-like odor. Eye and respiratory tract irritation; redness of skin and blisters develop 4 to 24 hours after exposure; hoarseness, sore throat, coughing, pulmonary edema	Treat like a thermal burn. Do not break blisters. Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.		C0.003 mg/m ³	AEL	0.5 mg/m ³
Nitric acid [7697-37-2]	11.95	0.3–1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	4 ppm 4 ppm 4 ppm	PEL TLV REL	100 ppm
Phosgene (CG)	?	?	Inh Con	Irritated eyes, nose and upper respiratory tract; wheezing and difficulty in breathing; eye and skin burns; pulmonary edema.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support	0.1 ppm 0.1 ppm 0.1 ppm	15-minute ceiling 0.1 ppm	PEL TLV REL	2 ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan
Calhoun County, Alabama**

(Page 5 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Portland cement			Inh	Fine gray powder that can be irritating if inhaled or in eyes.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention		10 mg/m ³ 10 mg/m ³ / total dust 5 mg/m ³ respirable fraction	TLV PEL/RE L	
2,4,6-Trinitrotoluene (TNT) [118-96-7]	10.59	?	Inh Abs Ing Con	Liver damage, jaundice; cyanosis; sneezing coughing, sore throat; peripheral neuropathy, muscular pain; kidney damage; cataract; sensitive dermatitis; leukocytosis; anemia; cardiac irregularities.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m ³ (skin) 0.5 mg/m ³ (skin) 0.5 mg/m ³ (skin)		PEL TLV REL	NE
VX	?	?	Abs	Anticholinesterase agent producing cholinergic poisoning; tightness in chest, wheezing, increased bronchial secretion, cough, breathing difficulty, pulmonary edema, death; CNS depression, coma, convulsion; sweating; salivation, abdominal cramps, heartburn, belching, diarrhea, involuntary defecation.	Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.		C0.00001 mg/m ³	AEL	0.4 mg/m ³

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan
Calhoun County, Alabama**

(Page 6 of 6)

^aIP = Ionization potential (electron volts).

^bRoute = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.

^cTWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.

^dSTEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.

^ePEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).

AEL = Airborne Exposure Limit.

TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value—TWA.

REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.

^fIDLH (NIOSH)—Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.

NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, PubNo. 90-117, 1990).

C = Ceiling limit value which should not be exceeded at any time.

Ca = Carcinogen.

NA = Not applicable.

? = Unknown.

LEL = Lower explosive limits.

LC₅₀ = Lethal concentration for 50 percent of population tested.

LD₅₀ = Lethal dose for 50 percent of population tested.

NIC = Notice of intended change (ACGIH).

References:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 1991, compiled by the American Conference of Governmental Industrial Hygienists.

Amoore, J. E. Hautula, "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, 1983.

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Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, 5th ed., 1986.

Fazzuluri, F. A., Compilation of Odor and Taste Threshold Values Data, American Society for Testing and Materials, 1978.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, CIVO, Netherlands, 1977.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, Supplement IV, CIVO, Netherlands, 1977.

Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.

Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.

National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. 1990, No. 90-117, National Institute for Occupational Safety and Health.

Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.

Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.

Verschueren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.

Warning Properties of Industrial Chemicals—Occupational Health Resource Center, Oregon Lung Association.

Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

2.2 General Site Information

Location of Site. Fort McClellan (FTMC) is located in the foothills of the Appalachian Mountains of northeastern Alabama near the cities of Anniston and Weaver in Calhoun County. FTMC is approximately 60 miles northeast of Birmingham, 75 miles northwest of Auburn and 95 miles west of Atlanta, Georgia. FTMC consists of three main areas of government-owned and leased properties: Main Post, Pelham Range and Choccolocco Corridor (lease terminated in May 1998).

The Toxic Gas Area, Parcel 211(7), is located in northwest Pelham Range. The oval-shaped area consists of approximately 300 acres of hilly, vegetated terrain that encompasses all of Training Area 10B and extends into parts of Training Areas 9A, 9B, and 10A. Delineated on a 1958 maneuver area map of Pelham Range, the Toxic Gas Area was used until the early 1960s (U.S. Army Center for Health Promotion and Preventive Medicine [CHPPM], 1999). Training Area 10B (Parcel 211[7]) is shown as a chemical area on Plate 2 of the USACE December 1999 *Archives Search Report, Ordnance and Explosives Chemical Warfare Materials, Pelham Range, Anniston Alabama*. The area was used for training exercises with chloroacetophenone (CN), ortho-chlorobenzylidene-malononitrile (CS), chlorine gas (CL), and smoke (Environmental Science and Engineering, Inc. [ESE], 1998). Currently, the site is posted with signs reading "Danger Toxic Gas Area, Keep Out"; however, access to the area is unrestricted (ESE, 1998).

The boundaries of Parcel 211(7) were extended west and southwest of Training Area 10B to include areas of suspected toxic chemical agent storage and disposal in Training Areas 9A and 10A (ESE, 1998). Storage and disposal sites were reportedly located in fenced areas a short distance from the road leading to Gate 10 (west of the Toxic Gas Area) and on the east side of the road leading to Range I. Little is known about the locations of the disposal areas; however, it is believed that toxic chemical agents were stored and/or disposed of due to restrictions on transportation of toxic chemical agent which precluded returning it to FTMC (ESE, 1998).

Range K, Range L (Lima Pond), Station No. 6, and a chemical obstacle course are all located within the Toxic Gas Area (ESE, 1998). The environmental baseline survey (EBS) also reported a personnel decontamination area and an identification/decontamination training station in the southern portion of the Toxic Gas Area (ESE, 1998). Range K, Range L (Lima Pond), and Station No. 6 of the chemical obstacle course are currently being investigated.

The *Archives Search Report* for Pelham Range states that in the 1950s the Chemical Corps School at Fort McClellan constructed a chemical, biological, and radiological (CBR) tactical training exercise course at Pelham Range in the Toxic Gas Area. CBR officers and enlisted soldiers received realistic training at a designated, seven-station field course (USACE, 1999). The field course consisted of:

- Station No. 1 included simulated machine-gun fire, blocks of nitrostarch, blasting caps, shell simulators, and CN-adamsite (DM) grenades.
- Station No. 2 included CN-DM grenades and simulator shell bursts.
- Station No. 3 included electric blasting caps, dud chemical shells, shell simulators, simulated machine-gun fire, and tubes of chloropicrin (PS) and phosgene (CG).
- Station No. 4 included blasting caps, M117 booby-trap simulators, shell simulators, and PS.
- Station No. 5 included radioactive sources. These were placed in a man-made crater (Lima Pond) to simulate the residue from an atomic bomb.
- Station No. 6 included electric blasting caps, detonating cord, molasses residuum mustard (MR), distilled mustard (HD), and simulated armor-piercing mines.
- Station No. 7 included white phosphorous, M-15 smoke grenades, HC smoke grenades, blocks of nitrostarch, M2 flame throwers, electric blasting caps, M5 smoke pots, shell simulators, and petarey thritol tetranitrate (PETN) detonating cord.

The obstacle course concluded with a personnel decontamination station consisting of a decontamination truck for washing hands and faces (CHPPM, 1999). The chemical obstacle course was used from approximately 1955 to 1963 (CHPPM, 1999).

A personnel decontamination station was established at the south side of the Toxic Gas Area (north of the burial mound at Rideout Field) and was used in conjunction with the Former Decontamination Training Area (Parcel 207[7]) (ESE, 1998). A detection and identification/decontamination training station was also located within the southern portion of the Toxic Gas Area (ESE, 1998). At this station, training exercises consisted of contaminating two World War II-era tanks with mustard and allowing trainees to perform detection tests. A second group of trainees would decontaminate the tanks using noncorrosive decontamination agent

(DANC) (ESE, 1998). The EBS states that mustard was the only chemical warfare agent used at this station.

A survey conducted by the U.S. Army Chemical School in 1967 declared the chemical obstacle course area free of contamination (CHPPM, 1999). All empty rounds, containers, and miscellaneous items were policed and disposed of in accordance with standard operating procedures (not specified). The area was bulldozed and decontaminated. Based on existing information, the report concluded there appeared to be no significant risk for surface activity; however, the exact location of the chemical obstacle course was unknown (CHPPM, 1999).

IT conducted site walks of Parcel 211(7) at Training Areas 9A, 9B, 10A, and 10B in July/August 2001 and January 2002. In Training Areas 9A and 9B, both sides of the road leading to Gate 10 were walked; however, no storage and/or disposal sites were located. Training Area 10B was walked from Range I to the intersection of the road south of Training Area 10B. North of Range I, three metal fence posts were observed in an east-west trending direction. A ground scar approximately 25 feet by 15 feet was noted between two of the posts.

Training Area 10B was walked for evidence of chemical warfare material (CWM). Along the eastern side of the site, three 55-gallon drums were found in various conditions, one labeled as a fog oil storage drum, and two containing small amounts of liquid. East of Station No. 6, four M33A1 tanks, labeled "Chemical Warfare Service USA," were observed. Two of the tanks were torn apart, two were intact. Two World War II-era tanks were noted in the south-central portion of Training Area 10B, east of the unimproved road to Lima Pond. Two other World War II era tanks were noted on a hillside, east of the previously mentioned tanks. Both sets were intact, one with a sign reading "Contaminated, Keep Off." One empty supertropical bleach (STB) drum was observed in the southeastern portion of the site near a decontamination station described in the EBS. Two bunkers separated by a large trench were observed on a hillside near the location of former Station No. 7. A fragment of an M2 flame-thrower was also noted at this location and several circular depressions were observed west of the bunkers. Several metal canisters were found to the west of Station No. 6, in and around depressions that appear to be former bunkers or foxholes. Artillery blanks, foxholes, depressions, and discarded training materials were found throughout the Toxic Gas Area.

Chemical agents and decontamination agents reportedly used at the Former Toxic Gas Area included:

- Chloroacetophenone (CN)
- Ortho-chlorobenzylidene-malononitrile (CS)
- Chlorine gas (CL)
- Chloropicrin (PS)
- Decontamination agent (noncorrosive) (DANC)
- Decontamination Solution Number 2 (DS2)
- Adamsite (DM)
- Phosgene (CG)
- Distilled mustard (HD)
- Supertropical bleach (STB).

CN. CN (chloroacetophenone) is a white crystalline solid used as a tear agent. CN is used in conjunction with mortar shells, grenades, and candles (U.S. Departments of the Army and the Air Force, 1963).

CS. CS (ortho-chlorobenzylidene-malononitrile) is a white crystalline powder used as a tear agent. A mixture of 95 percent crystalline agent and 5 percent crystalline gel is used as filling for bursting-type grenades and in all bulk irritant agent dispersant (U.S. Departments of the Army and the Air Force, 1963).

CL. CL was used as a tear agent, released from cylinders in gas chambers for training (U.S. Departments of the Army and the Air Force, 1963).

PS. PS acts as a vomiting agent, a choking agent, and a tear agent. Most often a percentage of PS is used with CN and chloroform to make CNS. CNS is distributed in bombs, spray tanks, mortar shells, and grenades (U.S. Departments of the Army and the Air Force, 1963).

DANC. DANC is a 6.25-percent solution of RH-195 (1,3-dichloro-5,5-dimethylhydantoin) in 1,1,2,2-tetrachloroethane (acetylene tetrachloride) and was adopted as a satisfactory HD decontamination agent in small-scale operations (U.S. Departments of the Army and the Air Force, 1963).

DS2. DS2 is a clear solution of general-purpose decontaminant consisting of 70 percent diethylenetriamine, 28 percent solvent (ethylene glycol monomethylether), and 2 percent active agent booster (sodium hydroxide). DS2 reacts with sarin and mustard to effectively reduce their

hazard within 5 minutes of application. It is effective for most toxic chemical agents. DS2 was applied manually or by using a portable decontaminating apparatus such as the M11 (U.S. Departments of the Army and Air Force, 1963).

DM. DM is a vomiting agent (diphenylaminochloroarsine) used for training and riot control. DM is used in candles and grenades (U.S. Departments of the Army and the Air Force, 1963).

CG. CG is a choking agent made of carbonyl chloride. CG exerts its effect solely on the lungs and results in watery fluid into the air sacs. It is used in mortar shells, bombs, rockets, and cylinders (U.S. Departments of the Army and the Air Force, 1963).

HD. HD is mustard (2,2-dichlorodiethylsulfide) that has been purified by washing and vacuum distillation. HD was used as a blister agent designed to affect the eyes and lungs and blister the skin (U.S. Departments of the Army and the Air Force, 1963).

STB. STB is a decontamination agent referred to as bleach, bleaching powder, supertropical bleach, bleaching material, or chlorinated lime. STB is a white powder containing about 30 percent available chlorine (U.S. Departments of the Army and the Air Force, 1963).

Duration of Planned Employee Activity. Employee activity duration is anticipated to be less than one month.

Pathways for Hazardous Substance Dispersion. Possible pathways for hazardous substances in the area are surface soils, subsurface soils, groundwater and the contents of the 55 gallon drums. The primary exposure routes include: inhalation, adsorption and ingestion.

3.0 Personal Protective Equipment

The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, Level C and Level B PPE is provided.

Task	Initial Level of PPE
Initial UXO avoidance sweep and equipment staging	Level D
Utility clearance	Level D
Geophysical surveys	Level D
Surface and subsurface soil sampling	Modified Level D*
Drum sampling (if intact) Drum sampling (not in tact)	Level B** Modified Level D* (poly tyvek & face shield)
Well installation	Modified Level D
Groundwater sampling	Modified Level D

*Initial level will be raised to Level C or higher if air monitoring results in the breathing zone (BZ) are greater than action levels.

** Level B PPE will be required to access the interior of the drum and collect samples if the drum is intact. Opening or puncturing the drum for sample collection shall be performed remotely. Refer to the Drum Sampling Standard Operating Procedure, Attachment 2 of the SAP.

Level D. The minimal level of protection that will be required of IT personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Nitrile or latex examination gloves for sampling
- Steel-toed safety boots
- Safety glasses

- Hardhat
- Wear hearing protection (when working near/adjacent to operating equipment).

Modified Level D. The following equipment will be used for Level D-Modified protection:

- Permeable Tyvek, Kleenguard, or its equivalent (poly coated for drum sampling)
- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hardhat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to Modified Level D PPE, the operator of high-pressure water jetting equipment (pressure washers) shall wear metatarsal guards for protection of the feet, leg guards, and a face shield for protection from splashes.

Level C. Level C protection will not be used unless air-monitoring data indicate the need for upgrade; however, the equipment shall be readily available on site. The following equipment will be used for Level C protection:

- National Institute of Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, air-purifying respirators equipped with organic vapor/acid gas cartridge in combination with high-efficiency particulate air filter
- Hooded Tyvek, taped at gloves, boots, and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hardhat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment (pressure washers) shall wear metatarsal guards for protection of the feet and leg guards. Splash shields can be utilized over the respirator to minimize spray and mist in the respirator cartridges and on the respirator polycarbonate lens.

Level B. The following equipment will be used for Level B protection:

- NIOSH/MSHA- approved self-contained breathing apparatus or air line respirators with Grade D breathing air cascade system
- Escape/egress air supply pack
- Saran coated tyvek taped at gloves, boots and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

4.0 Site Monitoring

The environmental contaminants of concern resulting from former activities on the Former Toxic Gas Area - Pelham Range, Parcel 211(7) are anticipated to be primarily nitroexplosives, CWM breakdown products and CWM decontaminants.

Table 4-1 contains action levels for site monitoring on the Former Toxic Gas Area - Pelham Range, Parcel 211(7).

Chemical. The site safety and health officer or qualified task geologist shall perform air monitoring during the performance of site activities and ground intrusive operations. A calibrated photo ionization detector (i.e., Hnu DL-101 or equivalent) organic vapor analyzer will be utilized to monitor the sampling locations and BZs to determine if any organic material may be present that would necessitate upgrading of the protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the borehole, work areas and BZs to determine if any combustible/flammable levels may be present that would necessitate evacuation of the work area. A Miniram PDM-3 or equivalent aerosol monitor shall be used to monitor airborne dust since metals are a potential concern.

Table 4-2 contains the air monitoring frequency and location for the site investigations.

Unexploded Ordnance. UXO support for sampling activities are specified in the site-specific UXO safety plan for the site investigations. The UXO specialists will perform UXO avoidance sweeps prior to moving the heavy equipment onto the site. During this operation, UXO on the surface will be detected and marked for avoidance during field operations. Additionally, downhole magnetometer surveys will be performed to detect metal objects in the path of sampling equipment or boring apparatus. The sampling/boring location will be moved to avoid subsurface metal objects. The practice of UXO avoidance shall be implemented for all intrusive activities.

If UXO is encountered, personnel will contact the site manager and UXO specialist immediately. Personnel will evacuate the immediate area and secure it.

Table 4-1

Action Levels
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama

(Page 1 of 2)

When in Level B Personal Protective Equipment (PPE)

Analyte	Action Level ^a	Required Action ^b
Volatile organic compounds (VOC)	25 parts per million (ppm) above background in breathing zone (BZ)	Stop work, evacuate work area, notify CIH
Oxygen	$\geq 20\%$, $< 23\%$ $< 20\%$, $> 23\%$	Normal operations Stop work, evacuate work area
Flammable vapors	$\geq 10\%$ lower explosive limit (LEL) $< 10\%$ LEL	Stop work, evacuate work area Continue operations, monitor for volatile organic compounds (VOC)

When in Level C PPE

Analyte	Action Level ^a	Required Action ^b
VOCs (volatile organic compound)	≥ 10 ppm above background in breathing zone (BZ)	Stop work, evacuate work area, upgrade to Level B; Notify CIH
Dust	> 2.5 mg/m ³ above background in BZ	Normal operations, initiate dust control to minimize migration.
LEL (lower explosive limit)	$\leq 10\%$ LEL $\geq 10\%$ LEL	Normal operations Stop work, identify source

Table 4-1

**Action Levels
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

When in Level D Modified/D PPE

Analyte	Action Level ^a	Required Action ^b
VOCs	≥ 1 ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE; Notify CIH
Dust	≥ 0.5 mg/m ³ above background in BZ	Stop work, Initiate dust control, upgrade to Level C PPE if dust control is not effective; Notify CIH
LEL (lower explosive limit)	≤ 10 % LEL ≥ 10 % LEL	Normal operations Stop work, identify source. Monitor for VOC's

When in Support Zone

Analyte	Action Level ^a	Required Action
VOCs	≥ 1 ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.
Dust	> 0.3 mg/m ³ above background in BZ	Stop work, Initiate dust control

^a Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

^b Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls..

No one is permitted to downgrade levels of PPE without authorization from the H&S manager.

Table 4-2

**Air Monitoring Frequency and Location
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
Staging equipment and UXO avoidance sweeps	OV Monitor Miniram	Initially for area Periodically	Breathing zone (BZ) of employees
Geophysical investigation	OV Monitor	Periodically	BZ of employees
Surface soil sampling	OV Monitor Miniram	Periodically Periodically	BZ of employees BZ of employees
Groundwater monitoring well installation/sampling and subsurface soil sampling	OV Monitor Miniram LEL/ O ₂	Continuously Periodically Periodically	BZ of employees BZ of employees Over bore hole

OV = Organic vapor.

Miniram = Aerosol (dust) monitor

LEL/O₂ = Lower explosive limit/oxygen level

5.0 Activity Hazard Analysis

The attached activity hazard analysis (Table 5-1) is provided for the following activities:

- Initial UXO avoidance sweep and equipment staging.
- Surface soil and subsurface soil sampling
- Drum sampling
- Geophysical investigations
- Monitoring well installation
- Moving and shipping collected samples.
- Disposal of investigative derived waste (forklift operations).
- High-pressure water jetting operations.

All injuries and illnesses must be immediately reported to the site manager or the site safety and health officer, who will then notify off-site personnel and organizations as necessary and in compliance with corporate policies.

If hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. See Figure 5-1 for directions to the Northeast Regional Medical Center.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 13)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging	Unexploded ordnance (UXO)	<ul style="list-style-type: none"> • UXO specialists will perform UXO avoidance and/or UXO downhole clearance for all site activities. • All UXO operations shall be in strict compliance with the site-specific UXO safety plan and Installation wide Ordnance and Explosives Management Plan (Installation-Wide OEMP). • Anomaly avoidance shall be in strict compliance with Section 2.3.5.5 in the Installation-Wide OEMP.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Determine best access route before transporting equipment. • Practice good housekeeping; keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards. • Look before you step; ensure safe and secure footing.
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.
	Falling objects	<ul style="list-style-type: none"> • Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none"> • Wear safety glasses/goggles; ensure that eye wash is in proper working condition.
	Pinch points	<ul style="list-style-type: none"> • Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cuts/bruises	<ul style="list-style-type: none"> • Use cotton or leather work gloves for material handling.
	Bees, spiders, and snakes	<ul style="list-style-type: none"> • Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Ticks	<ul style="list-style-type: none"> • Wear light colored clothing (can see ticks better). • Mow vegetated and small brush areas. • Wear insect repellant. • Wear long sleeves and long pants. • Visually check oneself promptly and frequently after exiting the work area.
	Fire	<ul style="list-style-type: none"> • Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> • Work area will be barricaded/demarcated. • Equipment will be laid out in an area free of traffic flow.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 13)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Hazard communication	<ul style="list-style-type: none">• Label all containers as to contents and dispose of properly.• Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.
	Noise	<ul style="list-style-type: none">• Sound levels above 85 decibels (dBA) mandates hearing protection.
	Lighting	<ul style="list-style-type: none">• Adequate lighting will be provided to ensure a safe working environment.
	Cold stress	<ul style="list-style-type: none">• Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F).• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.• Remove wet clothing promptly.• Take breaks in warm areas.• Reduce work periods as necessary.• Layer work clothing.
	Poison ivy/oak/sumac	<ul style="list-style-type: none">• Avoid plant areas if possible.• Wear long sleeves and long pants.• Promptly wash clothing that has contacted poisonous plants.• Wash affected areas immediately with soap and water.
	Heat rash	<ul style="list-style-type: none">• Keep the skin clean and dry.• Change perspiration-soaked clothing, as necessary.• Bathe at end of work shift or day.• Apply powder to affected area.
	Heat cramps	<ul style="list-style-type: none">• Drink plenty of cool fluids even when not thirsty.• Provide cool fluid for work crews.• Move victim to shaded, cool area.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 13)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Heat exhaustion	<ul style="list-style-type: none"> • Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature) • Set up work/rest periods. • Use the "buddy system." • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.
	Heat stroke	<ul style="list-style-type: none"> • Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices.
Geophysical investigation	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> • Work area will be barricaded/demarcated. • Equipment will be laid out in an area free of traffic flow. • Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic. • Barriers shall be used to protect workers from vehicular traffic. • Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided. • Heavy equipment shall have backup alarms.
	Equipment operations	<ul style="list-style-type: none"> • Use qualified and trained equipment operators. • The operator shall not exceed the load capacity or manufacturers recommendations for the equipment. • The load capacity shall be clearly visible on the equipment when applicable. • Equipment operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgment.
	Portable electric tools	<ul style="list-style-type: none"> • Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service. • Portable electric tools and all cord and plug connected equipment shall be protected by a ground fault circuit interrupter (GFCI) device. • Electrical tools shall be inspected daily prior to use.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 13)

Activity	Potential Hazards	Recommended Controls
Geophysical investigation (continued)	Extension cords	<ul style="list-style-type: none"> • Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service. • Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic. • Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.). • Cords shall be designed for hard duty. • Cords shall be inspected daily.
	Lightning strikes	<ul style="list-style-type: none"> • Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • Remain 6 feet away from tree trunk if seeking shelter beneath tree(s). • If in a group, keep 6 feet of distance between people.
	UXO	<ul style="list-style-type: none"> • All UXO operations shall be in strict compliance with the site-specific UXO safety plan and Installation wide Ordnance and Explosives Management Plan (Installation-Wide OEMP). • Anomaly avoidance shall be in strict compliance with Section 2.3.5.5 in the Installation-Wide OEMP.
	Slip, trip, fall	<ul style="list-style-type: none"> • Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field. • Provide adequate lighting in all work areas. • Whenever possible, avoid routing cords and hoses across walking pathways. • Flag or cover inconspicuous holes to protect against falls. • Work areas will be kept clean and orderly. • Garbage and trash will be disposed of daily in approved refuse containers. • Tools and accessories will be properly maintained and stored. • Work areas and floors will be kept free of dirt, grease, and slippery materials.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 13)

Activity	Potential Hazards	Recommended Controls
Geophysical investigation (continued)	Traffic accidents	<ul style="list-style-type: none"> Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians. If working adjacent to roadways, have workers wear fluorescent orange vests. Use warning signs or lights to alert oncoming traffic. Assign flag person(s) if necessary to direct local traffic. Set up temporary parking locations outside the immediate work area. Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits. Pedestrians have the right-of-way. Wear seat belts when vehicles are in motion.
	Wildlife hazards	<ul style="list-style-type: none"> Workers should be cautious when driving through the site in order to avoid encounters with passing animals.
	Biological hazards	<ul style="list-style-type: none"> Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).
	Ticks	<ul style="list-style-type: none"> Wear light colored clothing (can see ticks better). Mow vegetated and small brush areas. Wear insect repellant. Wear long sleeves and long pants. Visually check oneself promptly and frequently after exiting the work area.
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> Avoid plant areas if possible. Wear long sleeves and long pants. Promptly wash clothing that has contacted poisonous plants. Wash affected areas immediately with soap and water. Wash equipment that was in contact with potentially poisonous plants at the end of each shift.
Drilling and Installation of Monitoring Wells	Overhead hazards	<ul style="list-style-type: none"> Make sure no obstacles are within radius of boom. Always stay a safe distance from power lines.
	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. Equipment will be inspected before being put to use and at the beginning of each shift. Faulty/unsafe equipment will be tagged and if possible locked out. Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 6 of 13)

Activity	Potential Hazards	Recommended Controls
Drilling and Installation of Monitoring Wells (continued)	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> • Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. • All mobile equipment and areas in which they are operated shall be adequately illuminated. • Aboveground and belowground utilities will be located prior to staging equipment. • Whenever the equipment is parked, the parking brake shall be set. • Equipment parked on inclines will have the wheels chocked. • Inspect brakes and tire pressure on drill rig before staging for work.
	Inexperienced operator	<ul style="list-style-type: none"> • Machinery and mechanized equipment shall be operated only by designated personnel. • Operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.
	Jacks/outriggers	<ul style="list-style-type: none"> • Ensure proper footing and cribbing.
	Falling objects	<ul style="list-style-type: none"> • Remove unsecured tools and materials before raising or lowering the derrick. • Stay alert and clear of materials suspended overhead.
	Pinch points	<ul style="list-style-type: none"> • Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert at all times!
	Fire	<ul style="list-style-type: none"> • Mechanized equipment shall be shut down prior to and during fueling operations. • Have fire extinguishers inspected and readily available.
	Fall hazards	<ul style="list-style-type: none"> • Personnel are not allowed to work off of machinery or use them as ladders. • Use fall protection when working above 6 feet
	Noise	<ul style="list-style-type: none"> • Hearing protection is mandatory above 85 dBA.
	Contact with rotating or reciprocating machine parts	<ul style="list-style-type: none"> • Use machine guards; use long-handled shovels to remove auger cuttings. • Safe lockout procedures for maintenance work.
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Practice good housekeeping, keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 13)

Activity	Potential Hazards	Recommended Controls
Drilling and Installation of Monitoring Wells (continued)	Contact with potentially contaminated materials	<ul style="list-style-type: none"> Real time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized. Stop immediately at any sign of obstruction. Do not breathe air surrounding boring and auger cuttings. Upgrade to respirator if necessary. Avoid skin contact with soil cuttings. Wear gloves. Stay clear of moving parts of drill rig.
	UXO	<ul style="list-style-type: none"> UXO specialists will perform UXO surface and/or UXO downhole geophysics for UXO avoidance. Anomaly avoidance shall be in strict compliance with Section 2.3.5.5 in the Installation-Wide OEMP.
	Accidental exposure to chemical agents	<ul style="list-style-type: none"> Modified Level D personal protective equipment (PPE) will be required. Personnel will be equipped with an emergency egress supplied air pack. During each monitoring well installation activity, downhole geophysics will be performed. Engineering controls will be used as appropriate. Personnel will review site-specific evacuation procedures.
	Drum handling	<ul style="list-style-type: none"> Be careful not to breathe air from around open drum any more than necessary. Monitor with photoionization detector/flame ionization detector (PID/FID) equipment and upgrade to respirator if necessary. When filling a drum (with either soil or water), be careful not to make contact with the contained waste. Wear appropriate gloves. Make sure lid or bung of drum is secure. If moving a drum unassisted, be sure to leverage properly, use proper lifting techniques, and wear safety glasses and steel-toed boots. When using a drum dolly, make sure straps and lid catch are securely attached. Leverage properly when tilting drum. Be sure toes stay away from drum.
	Exposure to grouting particulates	<ul style="list-style-type: none"> No eating, drinking, or smoking will be allowed in work area. Appropriate PPE will be utilized as necessary to prevent over exposure to particulates.
	Equipment or hoses in an unsafe mechanical condition	<ul style="list-style-type: none"> Equipment and hoses will be inspected prior to use. Defective items will be removed from service.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 8 of 13)

Activity	Potential Hazards	Recommended Controls
Surface and subsurface soil sampling	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. Equipment will be inspected before being put to use and at the beginning of each shift. Faulty/unsafe equipment will be tagged and if possible locked out. Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. All mobile equipment and areas in which they are operated shall be adequately illuminated. Whenever the equipment is parked, the parking brake shall be set. Equipment parked on inclines will have the wheels chocked. Inspect brakes and tire pressure on drill rig before staging for work. Obtain trenching/drilling permit prior to operation.
	Inexperienced operator	<ul style="list-style-type: none"> Machinery and mechanized equipment shall be operated only by designated personnel. Heavy equipment operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.
	Jacks/outriggers	<ul style="list-style-type: none"> Ensure proper footing and cribbing.
	UXO	<ul style="list-style-type: none"> UXO specialists will perform UXO surface and/or UXO downhole geophysics for UXO avoidance. See SSHPs to determine if required. Anomaly avoidance shall be in strict compliance with Section 2.3.5.5 in the Installation-Wide OEMP.
	Accidental exposure to chemical agents	<ul style="list-style-type: none"> Low-level minicam or RTAPs monitoring will be performed by QBQ. Modified Level D PPE will be required. During the first 15 feet depth of each monitoring well installation activity, downhole geophysics (inside of probed boring) will be performed. Engineering controls will be used as appropriate. Personnel will review site-specific evacuation procedures. Personnel will be equipped with an emergency egress air supply pack.
	Falling objects	<ul style="list-style-type: none"> Remove unsecured tools and materials before raising or lowering the derrick. Stay alert and clear of materials suspended overhead.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 9 of 13)

Activity	Potential Hazards	Recommended Controls
Surface and subsurface soil sampling (continued)	Pinch points	<ul style="list-style-type: none"> Keep feet and hands clear of moving/suspended materials and equipment. Stay alert at all times!
	Fire	<ul style="list-style-type: none"> Mechanized equipment shall be shut down prior to and during fueling operations. Have fire extinguishers inspected and readily available.
	Fall hazards	<ul style="list-style-type: none"> Personnel are not allowed to work off of machinery or use them as ladders. Use fall protection when working above 6 feet.
	Noise	<ul style="list-style-type: none"> Hearing protection is mandatory above 85 dBA.
	Contact with rotating or reciprocating machine part	<ul style="list-style-type: none"> Use machine guards; use long-handled shovels to remove auger cuttings. Safe lockout procedures for maintenance work.
	Heavy lifting	<ul style="list-style-type: none"> Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> Practice good housekeeping; keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> Real time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized.
Groundwater Sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. Avoid skin contact with water. Handle samples with care. Only essential personnel will be in the work area. Real-time air monitoring will take place before and during sampling activities. All personnel will follow good hygiene practices. Proper decontamination procedures will be followed. All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 10 of 13)

Activity	Potential Hazards	Recommended Controls
Groundwater Sampling (continued)	UXO	<ul style="list-style-type: none"> UXO specialists will perform UXO surface and/or UXO downhole geophysics for UXO avoidance.
	Cut hazards	<ul style="list-style-type: none"> Use care when handling glassware. Wear adequate hand protection.
	Hazard communication	<ul style="list-style-type: none"> MSDSs shall be obtained for chemicals brought on site. Label all containers as to contents.
	Strains/sprains	<ul style="list-style-type: none"> Use the proper tool for the job being performed. Get assistance if needed. Avoid twisting/turning while pulling on tools, moving equipment, etc.
	Spills/residual materials	<ul style="list-style-type: none"> Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	<ul style="list-style-type: none"> Adequate lighting will be provided to ensure a safe working environment.
	Unattended worker	<ul style="list-style-type: none"> "Buddy system" - visual contact will be maintained with the sampling technician during sampling activities.
Drum Sampling	UXO	<ul style="list-style-type: none"> UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist immediately.
	Cross contamination and contact with potentially contaminated materials.	<ul style="list-style-type: none"> Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. Avoid skin contact with contents. Handle samples with care. Only essential personnel will be in the work area. Real-time air monitoring will take place before and during sampling activities. All personnel will follow good hygiene practices. Proper decontamination procedures will be followed. All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 11 of 13)

Activity	Potential Hazards	Recommended Controls
Drum Sampling (continued)	Cut hazards	<ul style="list-style-type: none"> • Use care when handling glassware. • Wear adequate hand protection.
	Strains/Sprains	<ul style="list-style-type: none"> • Use the proper tool for the job being performed. • Get assistance if needed. • Avoid twisting/turning while pulling on tools, moving equipment, etc.
	Spills/residual materials	<ul style="list-style-type: none"> • Absorbent material and containers will be kept available where leaks or spills may occur. • Puncture drum at highest point to minimize potential liquid spill.
	Unattended worker	<ul style="list-style-type: none"> • Use "buddy system" – visual contact will be maintained with the sampling technician during sampling activities.
	Flammable vapors	<ul style="list-style-type: none"> • Use nonsparking tools to pierce drum remotely. • Perform VOC/O₂/LEL air monitoring inside drum.
Moving and Shipping Collected Samples	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Pinch points	<ul style="list-style-type: none"> • Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cut hazards	<ul style="list-style-type: none"> • Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	<ul style="list-style-type: none"> • Label all containers as to contents and associated
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
Disposal of investigation- derived waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	<ul style="list-style-type: none"> • Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgment.

Table 5-1

**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 12 of 13)

Activity	Potential Hazards	Recommended Controls
Disposal of investigation-derived waste (IDW) (Forklift Operation) (continued)	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> Stop immediately at any sign of obstruction. Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. Only essential personnel will be in the work area. Real-time air monitoring will take place before and during sampling activities. All personnel will follow good hygiene practices. Proper decontamination procedures will be followed. All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
High-pressure water jetting operations	Cut hazards	<ul style="list-style-type: none"> Use care when handling glassware. Wear adequate hand protection.
	Heavy lifting	<ul style="list-style-type: none"> Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> Good housekeeping shall be implemented. The work area shall be kept clean as feasible. Inspect the work area for slip, trip, and fall hazards.
	Fueling	<ul style="list-style-type: none"> Only approved safety cans shall be used to store fuel. Do not refuel equipment while it is operating. Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Faulty or damaged equipment	<ul style="list-style-type: none"> Equipment shall be inspected before being placed into service and at the beginning of each shift. Preventive maintenance procedures recommended by the manufacturer shall be followed. A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
	High-pressure water	<ul style="list-style-type: none"> Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate). One standby person shall be available within the vicinity of the pump during jetting operation. The work area shall be isolated and adequate barriers will be used to warn other site personnel.

Table 5-1

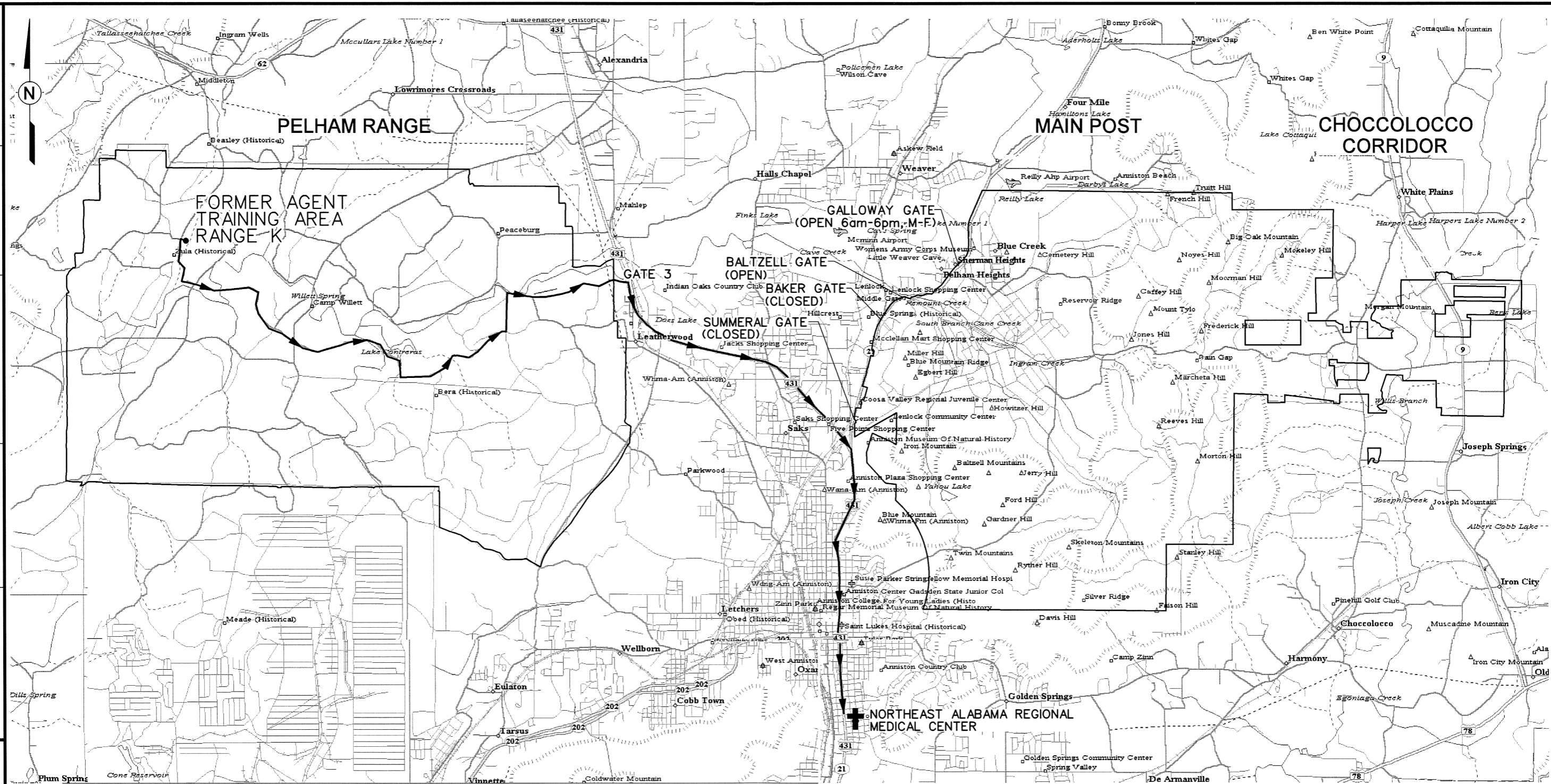
**Activity Hazard Analysis
Former Toxic Gas Area-Pelham Range, Parcel 211(7)
Fort McClellan, Calhoun County, Alabama**

(Page 13 of 13)

Activity	Potential Hazards	Recommended Controls
Disposal of investigation-derived waste (IDW) (Forklift Operation)	Unqualified operators	<ul style="list-style-type: none"> Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.
	Out of control equipment	<ul style="list-style-type: none"> No machinery or equipment is permitted to run unattended. Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Noise	<ul style="list-style-type: none"> Sound levels above 85 dBA mandates hearing protection by nearby site personnel.
	Activation during repairs	<ul style="list-style-type: none"> All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	<ul style="list-style-type: none"> Keep feet and hands clear of moving/suspended materials and equipment. Stay alert and clear of materials suspended
	Falling objects	<ul style="list-style-type: none"> Hard hats are required by site personnel. Stay alert and clear of material suspended overhead.
	Flying debris	<ul style="list-style-type: none"> Impact-resistant safety glasses with side shields are required.
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> All site personnel will wear the appropriate PPE.

11/07/01
09:02:31 AM
DWG. NO.: 774645es.697
PROJ. NO.: 774645
INITIATOR: C. RHODES
PROJ. MGR.: J. YACOB
DRAFT. CHK. BY: S. MORAN
ENGR. CHK. BY: S. MORAN
DATE LAST REV.:
DRAWN BY: D. BILLINGSLEY

DBILLING
c:\cadd\design\774645es.697

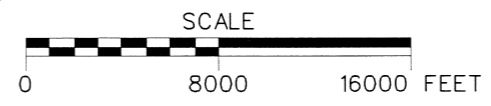


LEGEND:

- ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
- U.S. HIGHWAY
- HOSPITAL
- INVESTIGATION SITES

DRIVING DIRECTIONS FROM PELHAM RANGE GATE 3 TO THE NORTHEAST ALABAMA MEDICAL CENTER

- EXIT PELHAM RANGE AT GATE NO. 3 AND TURN RIGHT ON U.S. HWY 431
- CONTINUE TO WHERE AL HWY 21 MERGES WITH U.S. HWY 431 AND CONTINUE SOUTH
- CONTINUE SOUTH ON AL21/US431 FOR ~ 2.7 MILES
- TURN LEFT ONTO EAST 10th STREET
- GO ~ 0.2 MILE TO MEDICAL CENTER ON RIGHT
- NORTHEAST ALABAMA REGIONAL MEDICAL CENTER, 400 EAST 10 TH STREET
- PHONE NUMBER : (256) 235-5121



**FIGURE 5-1
HOSPITAL EMERGENCY ROUTE**

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT MCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



ATTACHMENT 1

PELHAM RANGE EMERGENCY ROUTE AND RANGE CONTROL CONTACT

Pelham Range Emergency Routes

- Range Control will determine depending on the wind direction the best egress route.
- Range Control will advise over the radio which route to take.
- 4 routes have been indicated on the enclosed map.

Medical Emergency

- Exit gate Number 3 at Pelham Range,
- Turn right onto Route 431,
- Turn right onto Highway 21 (Quintard),
- Turn left onto 10th Street,
- Hospital is 1-1/2 blocks ahead,
 - Northeast Alabama Regional Medical Center
 - 400 East 10th Street
 - Anniston, Alabama

Range Control- Pelham Range

- Building 1120, Ft McClellan
Phone No. 848-6772
Fax No. 848-4412

All access permits are issued by range control, daily.

FORT MCCLELLAN ALERT AND NOTIFICATION SYSTEM

An outdoor electronic alert and notification system is operational on Fort McClellan and Pelham Range. The purpose of this system is to provide warning(s) of an emergency situation that poses a threat to the safety and health of personnel on Fort McClellan and Pelham Range. The system has the capability of providing digital voice, electronic tone alerts and live voice loudspeaker warnings of emergency situations. The following is a list of the digital voice and associate tone alerts for the various hazards that could threaten personnel on both portions of the installation:

1. **THIS IS A TEST!** This is a test of the Fort McClellan emergency warning system. **THIS IS A TEST AND ONLY A TEST!** **WAIL TONE**

This message is used for the monthly test on the first Tuesday at 1600 hrs.

2. **WARNING! TORNADO WARNING!** A tornado warning has been issued for this area. Seek shelter immediately. Tune to a local radio station. Seek shelter immediately. **TORNADO WARNING!** **SOLID TONE**

3. **WARNING! SEVERE WEATHER WARNING!** A severe weather warning has been issued for this area. Standby for further instructions. Tune to a local radio station. **SEVERE WEATHER WARNING!** **SOLID TONE**

4. **WARNING! THUNDERSTORM WARNING!** A thunderstorm warning has been issued for this area. Standby for further instructions. Tune to a local radio station. **THUNDERSTORM WARNING!** **SOLID TONE**

5. **WARNING! HAZARDOUS MATERIALS ACCIDENT!** There has been a hazardous materials accident. Standby for further instructions. Tune to a local radio station. **HAZARDOUS MATERIALS ACCIDENT!** **HI-LO TONE**

6. **WARNING! Anniston Army Depot has announced a chemical agent release. Standby for further instructions. Tune to FM 100 radio station. CHEMICAL AGENT RELEASE!** **WHOO TONE**

7. **ALL CLEAR!** The emergency situation is over. **ALL CLEAR!** The emergency situation is over. **ALL CLEAR!** **NO TONE**

8. **CHEMICAL ALERT!** Initiate evacuation procedures immediately. A chemical agent release has occurred at Anniston Army Depot. **EVACUATE IMMEDIATELY! CHEMICAL ALERT!** **WHOO TONE**

This voice message was specifically designed for Pelham Range.

Sequence of initial alert and notification is:

VOICE MESSAGE--TONE--VOICE MESSAGE--TONE
repeated twice, again as the situation warrants.

Enclosure One

ATTACHMENT 2

EVALUATING OE/UXO/CWM HAZARDS IN SUPPORT OF HTRW ACTIVITIES

Site Name: Former Toxic Gas Area, Parcel 211(7)

Job Number: 774645

Name of person completing form: Leslie O'Hare

Signature: 

Date: 19-Jun-02

Title: Geologist

1a. Have the historical records available for this HTRW site been reviewed? Yes ☒ No ☐

If the answer to 1a. is yes, proceed to 1b.

If the answer to 1a. is no, review site information prior to completing this form.

1b. Is there recent information (site walk, worker interviews, etc.) that indicates a potential OE/CWM hazard at this site? Yes ☒ No ☐

Proceed to 2.

2. According to the records review, is this site known or suspected to have been used for:

	Yes	No
2a. Manufacturing, production, or shipping of conventional or chemical warfare materiel (CWM) OE:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Live fire testing of any ordnance:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conventional or CWM OE training:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Storage of conventional or CWM OE:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disposal or demilitarization of conventional or CWM OE:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other (specify):		

	Yes	No
2b. Manufacturing, production, or shipping of chemical agent:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Research or testing of chemical agent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chemical agent related training:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Storage of chemical agent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Disposal or demilitarization of chemical agent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other (specify):		

Any 2a question answered "YES" indicates UXO support is required for all site activities. If all 2a questions are answered "NO", UXO support may not be required. Refer to Installation-Wide Safety and Health Plan (SHP) for additional information concerning UXO support. Proceed to question 2b.

Any 2b question answered "YES" requires the remainder of this form to be completed. If all 2b questions are answered "NO", real-time monitoring for chemical agent will not be required and completing the remainder of this form is not required. Refer to SHP for additional information concerning agent monitoring.

Additional space for notes and explanations on page 4.

Continue to page 2 of 4 –

Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities

Site Name: Former Toxic Gas Area, Parcel 211(7)

Job Number: 774645

Page 2 of 4

Date: 19-Jun-02

3. For sites where the manufacturing, testing, storage, or disposal of CWM is suspected:	Yes	No
Is there evidence that the CWM is/was containerized in potentially unexploded ordnance:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there evidence that the CWM is/was containerized in nonexplosive containers:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there evidence that the CWM is open to the environment (i.e., in an open container or free liquid/solid in the soil/water):	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there evidence that the CWM hazard has been removed from the site or that the site has been decontaminated:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Has the site been previously monitored or sampled for chemical agent or agent breakdown products:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
For any "YES" above, was the agent or breakdown product identified?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

For any "Yes", list types of agent (mustard, lewisite, etc.) and the form (in ordnance, in drum, etc.) the CWM is expected to be found (or state "unknown"):

The are has been previously surveyed and decontaminated by the U.S. Army Chemical School (1967); therefore, CWM is not expected to be found at the site; however, CWM breaddown products are likely to be found.

List agent breakdown products identified:

N/A

4. Defining the Potential for the Presence of CWM:	Agent Monitoring Requirements for Site Activities:
4a. High Presence Potential – Definition: CWM is known or highly suspected to be present at the site in a condition (within ordnance and/or nonexplosive container, or in an uncontainerized form in sufficient volume that weathering of the product has not rendered it harmless) that will cause potential harm to personnel if it is encountered.	Mandatory personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).
4b. Moderate Presence Potential - Definition: CWM is suspected to have been present at the site, but has been previously removed and/or decontaminated, or has been open to the environment such that it is expected to have degraded and been rendered harmless.	The need for personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples will be reviewed on a site-by-site basis. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).
4c. Low Presence Potential – Definition: No indications that CWM will be present in quantity or reactivity (in munitions, projectiles, drums, etc.).	No specific personal or area monitoring for chemical agents required beyond what is specified in the SHP.

Continue Page 3 of 4 -

Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities

Page 3 of 4

Site Name: The Former Toxic Gas Area, Parcel 211(7)

Job Number: 774645

Date: 19-Jun-02

Based on the information available for this site, including information gathered during completion of this form, the potential for CWM to be present at this site, as defined above, is expected to be: **LOW**

Exceptions/Explanations:

(additional space for notes and explanations on page 4)

5. Based on the information provided in questions 1 through 5, above, the following guidelines will be used for establishing PPE requirements for activities to be performed at this site; Specific details are provided in the SSHP:

5a. High Exposure Potential - High exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).

Subject to review by the IT CIH, PPE for all personnel in the exclusion zone at a site identified as having a "High Exposure Potential" will be Level B (supplied air) or Level C (full-face respirator with HEPA/Acid Gas/OV cartridges w/ emergency egress hood) and chemically resistant coveralls. Specific PPE requirements are in the SSHP for this site.

5b. Moderate Exposure Potential - Moderate exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).

Subject to review by the IT CIH, PPE for all personnel in the exclusion zone at a site identified as having a "Moderate Exposure Potential" will be Modified Level D (disposable coveralls and emergency egress hood) carried by all personnel. Specific PPE requirements are in the SSHP for this site.

5c. Low Exposure Potential - Low exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).

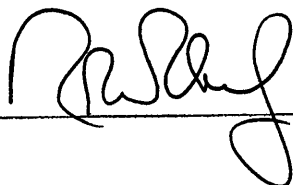
Subject to review by the IT CIH, no additional PPE requirements above those stated in the SSHP are needed for sites identified as having "Low Exposure Potential." Specific PPE requirements are in the SSHP for this site.

Based on all available information, the exposure potential at this site is considered to be: **LOW**

Exceptions/Explanations: (see page 4)

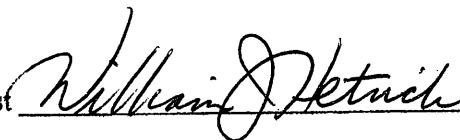
Review Signatures:

IT UXO Technical Manager



Date: 13 Aug 02

IT H&S Specialist



Date: 8/15/02

Site Name: The Former Toxic Gas Area, Parcel 211(7)**Job Number: 774645****Date: 19-Jun-02*****Additional Notes and Explanations:***

The Toxic Gas Area, Parcel 211(7) encompasses all of Training Area 10B, and extends into parts of Training Areas 9A, 9B, and 10A, in northwest Pelham Range. The oval-shaped area consists of approximately 300 acres of hilly, vegetated terrain. The Toxic Gas Area was delineated on a 1958 maneuver area map of Pelham Range and was used until the early 1960's (U.S. Army Center for Health Promotion and Preventive Medicine, 1999). Reportedly a "chemical obstacle course" used for training exercises with CWM and smoke was established in the oval-shaped portion of the Toxic Gas Area. Currently, the site is posted with signs reading "Danger Toxic Gas Area, Keep Out," however, unauthorized access to the area is possible (EBS, 1998). Parcel 211(7) was extended west and southwest of Training Area 10B to include areas of speculated toxic chemical agent storage and disposal in Training Areas 9A and 10A (EBS, 1998) (Figure 1-2). Storage and disposal sites were reportedly located in fenced areas a short distance from the road leading to Gate 10 (west of the Toxic Gas Area) and on the west side of the road leading to Range I. Little is known about the locations of the disposal areas, however, it is believed that toxic chemical agents were stored and/or disposed of due to restrictions on transportation of toxic chemical agent which precluded returning it to FTMC (EBS, 1998).

A survey conducted by the U.S. Army Chemical School in 1967 declared the chemical obstacle course area free of contamination (CHPPM, 1999). All empty rounds, containers, and miscellaneous items were policed and disposed of in accordance with standard operating procedures (not specified). The area was bulldozed and decontaminated. Based on existing information, the report concluded there appeared to be no significant risk for surface activity; however, the exact location of the Chemical Obstacle Course was unknown (CHPPM, 1999).

Chemical agents and decontamination agents reportedly used at the Toxic Gas Area included: chloroacetophenone (CN), ortho-chlorobenzylidene-malononitrile (CS), chlorine gas (CL), chloropicrin (PS), adamsite (DM), phosgene (CG), distilled mustard (HD), decontamination agent (noncorrosive) (DANC), and supertropical bleach (STB).

Note: The Department of the Army-Huntsville Center has released Pelham Range for HTRW investigations. See attached memorandum: Department of Army, Huntsville Center, Corps of Engineers, dated June 4, 2002.

Emergency egress packs will be provided because of the potential for CWM at the site.

ATTACHMENT 3

CHEMICAL DATA SHEETS, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS

NIOSH Pocket Guide to Chemical Hazards

1,3-Dichloro-5,5-dimethylhydantoin			CAS 118-52-5
C ₅ H ₆ Cl ₂ N ₂ O ₂			RTECS MU0700000
Synonyms & Trade Names Dactin, DDH, Halane			DOT ID & Guide
Exposure Limits	NIOSH REL: TWA 0.2 mg/m ³ ST 0.4 mg/m ³		
	OSHA PEL†: TWA 0.2 mg/m ³		
IDLH 5 mg/m ³ See: 118525		Conversion	
Physical Description White powder with a chlorine-like odor.			
MW: 197.0	BP: ?	MLT: 270°F	Sol: 0.2%
VP: ?	IP: ?		Sp.Gr: 1.5
Fl.P: 346°F	UEL: ?	LEL: ?	
Combustible Solid			
Incompatibilities & Reactivities Water, strong acids, easily oxidized materials such as ammonia salts & sulfides			
Measurement Method None available See: NMAM INDEX			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily Provide: Eyewash		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH/OSHA Up to 2 mg/m ³ : (APF = 10) Any supplied-air respirator Up to 5 mg/m ³ : (APF = 25) Any supplied-air respirator operated in a continuous-flow mode/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern and having a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus			
Exposure Routes inhalation, ingestion, skin and/or eye contact			
Symptoms irritation eyes, mucous membrane, respiratory system			

Target Organs Eyes, respiratory system

See also: [INTRODUCTION](#) See [MEDICAL TESTS: 0072](#)

NIOSH Pocket Guide to Chemical Hazards

o-Chlorobenzylidene malononitrile			CAS 2698-41-1
ClC ₆ H ₄ CH=C(CN) ₂			RTECS 003675000
Synonyms & Trade Names 2-Chlorobenzalmalonitrile, CS, OCBM			DOT ID & Guide 2810 153
Exposure Limits	NIOSH REL: C 0.05 ppm (0.4 mg/m ³) [skin]		
	OSHA PEL†: TWA 0.05 ppm (0.4 mg/m ³)		
IDLH 2 mg/m ³ See: 2698411		Conversion 1 ppm = 7.71 mg/m ³	
Physical Description White crystalline solid with a pepper-like odor.			
MW: 188.6	BP: 590-599°F	MLT: 203-205°F	Sol: Insoluble
VP: 0.00003 mmHg	IP: ?		Sp.Gr: ?
Fl.P: ?	UEL: ?	LEL: ?	MEC: 25 g/m ³
Combustible Solid			
Incompatibilities & Reactivities Strong oxidizers			
Measurement Method Filter/Tenax Gas chromatography; Reagent; High-pressure liquid chromatography/Ultraviolet detection; II(5) [P&CAM #304] See: NMAM INDEX			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated/Daily Remove: When wet or contaminated Change: Daily		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH/OSHA Up to 2 mg/m ³ : (APF = 25) Any supplied-air respirator operated in a continuous-flow mode [‡] /(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern and having a high-efficiency particulate filter/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure- demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern and having a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus			

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact
Symptoms Pain, burn eyes, lacrimation (discharge of tears), conjunctivitis; erythema (skin redness) eyelids, blepharospasm; irritation throat, cough, chest tightness; headache; erythema (skin redness), vesiculation skin
Target Organs Eyes, skin, respiratory system
See also: <u>INTRODUCTION</u> See ICSC CARD: <u>1065</u>

NIOSH Pocket Guide to Chemical Hazards

alpha-Chloroacetophenone			CAS 532-27-4
C₆H₅COCH₂Cl			RTECS AM6300000
Synonyms & Trade Names 2-Chloroacetophenone, Chloromethyl phenyl ketone, Mace®, Phenacyl chloride, Phenyl chloromethyl ketone, Tear gas			DOT ID & Guide 1697 153
Exposure Limits	NIOSH REL: TWA 0.3 mg/m ³ (0.05 ppm)		
	OSHA PEL: TWA 0.3 mg/m ³ (0.05 ppm)		
IDLH 15 mg/m ³ See: 532274		Conversion 1 ppm = 6.32 mg/m ³	
Physical Description Colorless to gray crystalline solid with a sharp, irritating odor.			
MW: 154.6	BP: 472°F	MLT: 134°F	Sol: Insoluble
VP: 0.005 mmHg	IP: 9.44 eV		Sp.Gr: 1.32
Fl.P: 244°F	UEL: ?	LEL: ?	
Combustible Solid			
Incompatibilities & Reactivities Water, steam, strong oxidizers [Note: Slowly corrodes metals.]			
Measurement Method Tenax Gas chromatography(2); Thermal desorp; Gas chromatography/Flame ionization detection; II (5) [P&CAM #291] See: NMAM INDEX			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily Provide: Eyewash		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH/OSHA Up to 3 mg/m ³ : (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s) in combination with a dust and mist filter/(APF = 10) Any supplied-air respirator Up to 7.5 mg/m ³ : (APF = 25) Any supplied-air respirator operated in a continuous-flow mode [£] / (APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) in combination with a dust and mist filter [£] Up to 15 mg/m ³ : (APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern and having a high-efficiency particulate filter/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions (APF = 10,000) Any			

self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern and having a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, respiratory system; pulmonary edema

Target Organs Eyes, skin, respiratory system

See also: INTRODUCTION See ICSC CARD: 0128